Project Introduction

NASA faces many systems engineering challenges as it seeks to conduct exploration and science missions concurrently. One such challenge is implementing a repeatable systems engineering process to missions that vary greatly in scale and complexity. The same process applied to lunar and Mars exploration missions, for example, do not necessarily scale well to Earth science missions. Existing systems engineering tools do not adequately address this problem. They tend to be inflexible implementations of a "one size fits all" approach to process, and provide little or no interoperability with other tools used in the system engineer's workflow. Emergent Space Technologies, Inc. proposes to develop the Systems Engineering Process Realization Toolkit (SE-PRO). SE-PRO will broaden the capabilities for capturing, communicating, and implementing the systems engineering process, regardless of the size of the mission based on the ability to customize the Capability Maturity Model Integration (CMMI) approach to process implementation. The innovation lies in the intuitive graphical user interface that allows systems engineers to combine processes like CMMI, NASA Procedural Requirements (NPR's), and Goddard Procedural Requirements (GPR's), into a single process that is modifiable by the missions to specify the workflows, team assignments, and output products according to their needs.

Primary U.S. Work Locations and Key Partners
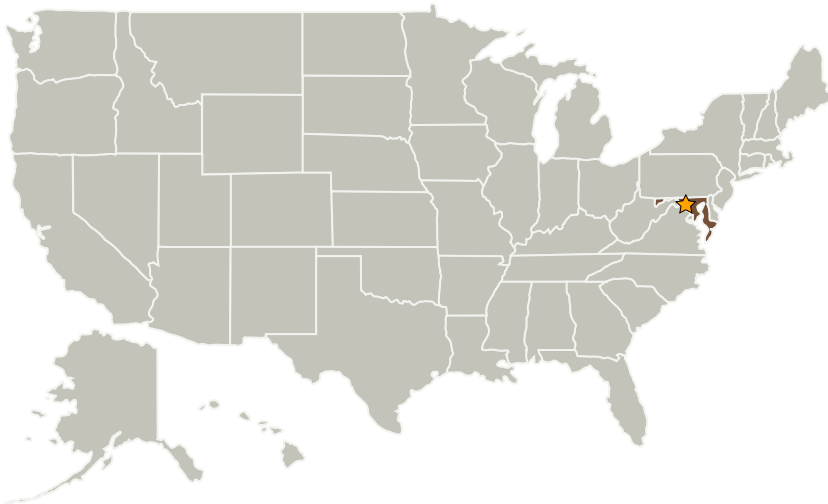

System Engineering Process Realization Toolkit, Phase I

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Organizations Performing Work	Role	Type	Location
⭐Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Emergent Space Technologies, Inc.	Supporting Organization	Industry	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  └ TX11.5 Mission Architecture, Systems Analysis and Concept Development
    └ TX11.5.2 Tools and Methodologies for Performing Systems Analysis